

Instruction Manual

Punch Factory

⚡
48V



Phantom Powered

Genuine

APHEX

Model 1404

Genuine

Notice

Aphex reserves the right to continually improve our products. This is an updated manual covering the improved pedals built after February 2004.

Model upgrades include:

1. The ability to run from phantom power
2. Increased protection from breakdown caused by ground differences
3. Increased external power voltage limits

Pedals manufactured prior to 2/04 do not have phantom power capability. Those units are clearly marked on the bottom cover to indicate that applying phantom power to the D.I. output is not recommended. Due to substantial technical modifications, older units cannot be upgraded.

Instruction Manual

Aphex P/N 999-4280 Rev. 4/17/04

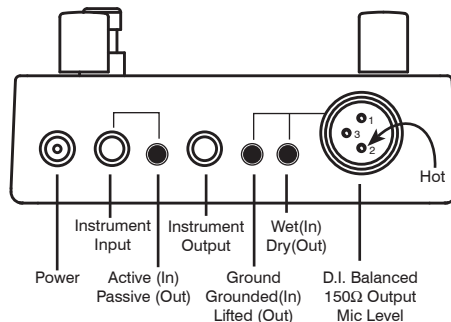
1404 Punch Factory™

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Hook-Up



a. Direct By-Pass

When the unit is switched “off” (no effect) your instrument is routed directly to the output jack and does not pass through any electronics.

b. Input

When plugging in, make sure you set the input active/passive switch to match your instrument's pickup. This assures the optimum level and impedance match. **The power is automatically switched**

on or off by inserting or removing the plug from the input jack. Simply removing the plug from your instrument does not turn off the Aphex unit.

c. Instrument Output

Connect this output to your amp's input jack using a good quality guitar cord. Use the same jack and active/passive settings on your amplifier as you would use if plugging the instrument directly into the amp. That way, you'll get normal volume and tone when you switch the effect off, and your instrument passes directly through the box to your amp's input.

d. D.I. Output

Yes, your pedal comes with a super quality balanced D.I. output! Pin 2 of the XLR is hot while pin 3 carries a balancing impedance to set up a true balanced line. Pin 1 is grounded through the ground-lift switch. The D.I. output can be connected to the microphone input of any preamp or sound mixer and runs a level of typically -50 to -60 dBu depending on your instrument's volume setting. You can switch the D.I. output to either wet (with effect) or dry (without effect) buffered balanced output. The D.I. output

should normally be grounded. Don't lift the ground unless it actually eliminates hum or buzz.

e. External Power

When external power is used, the internal battery becomes disconnected and will not experience a power drain. A wide range of both a.c. and d.c. supply voltages is acceptable for power (see specifications) and it does not matter whether the center pin is positive or negative. Almost any existing foot pedal or stomp box power unit will work as long as the plug fits the jack. The power jack fits a standard 6MM x 2MM power plug as used by most popular stomp boxes.



f. Phantom Power

With all pedals built after February 2004, phantom power applied to the D.I. will supply reliable power. **Do NOT operate the ground lift switch when running on phantom power. It makes a horrendous click like plugging in a mic!**

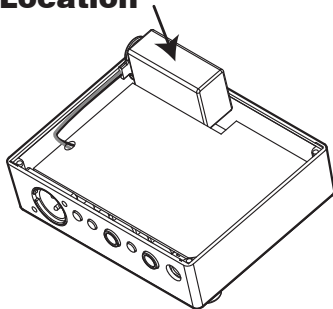
g. 9V Battery

You can use any type of 9V battery that fits the snap

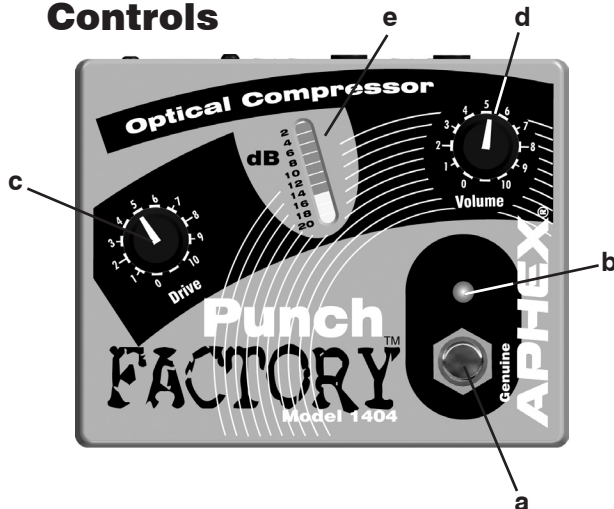
connector. You can use rechargables, but the Aphex unit does not supply a charging circuit. You must remove the discharged battery to recharge it with an external charger. We recommend using long life alkalines. The internal battery is replaced by removing 4 screws holding the bottom cover. You can expect from 100 to 150 hours of continuous use from a fresh alkaline battery. Useful life is ended when the battery voltage drops below 5.5 volts.

To extend battery life, always unplug the input when the unit is not in use.

Battery Location



Controls



a. Foot Switch

Turns the effect on or off. When the effect is off, your instrument is patched directly through to the output jack. In other words, it's a straight bypass. No electronics are in the line at that point.



b. LED

Glows when the effect is on. Dark when the effect is off.

If the LED does not operate, then the battery is dead, or no plug has been inserted into the input jack to turn on the unit's power.

c. Drive

Drives the compression to greater or lesser depth. As you increase the drive, the compression increases, and the sound is more compressed. The output volume will slightly increase as the sound is made fatter by more compression drive.

d. Volume

Adjusts the output volume when the foot switch is on so you can equalize the volume versus when the foot switch is off. You may need to adjust the volume a little whenever you increase or decrease the Drive.

e. dB Bar Graph Meter

Shows you the gain changing action of the compres-

sor. It is calibrated in dB (decibels) of gain reduction.

Tune-Up

a. The Rules

There's just one rule: Setting up your Punch Factory is easy!

b. Getting It Going

While in bypass, adjust your instrument's volume and tone controls as you normally would. Then, switch the Punch Factory on and adjust the Drive control to get some amount of compression as indicated on the dB Bar Graph Meter. Adjust the Punch Factory's Volume so the sound is where you want it with the foot switch on versus off.

The setting of the Drive control is not really critical. You'll start loving it immediately. However, the more you use it the better you will know when it is set just the way you like it best.

Theory

It you are reading this, congratulations! Not everyone will stop here to learn exactly how the Punch Factory works. We'll keep this description light and not too technical, however. We want as many musicians as possible to get a basic grasp of how this product works.

a. Compressors - What They Do

The basic idea is that a wide range of input levels is automatically "compressed" into a lower range of output levels. After compression, sounds that were low in volume are higher in volume. One could also argue that loud sounds are made lower in volume.

b. What Is a Compressor Good For?

When used well, a proper compressor will extend the sensitivity of an instrument, bringing up the tonal nuances that contain the sensuality of your music. That goes just as well for basses as guitars. Your music will be more consistent, filling the volume envelope more fatly, making the track stand out better in a mix. Similarly, in live music, you will

fill better and your playing will be more apparent among the band.

Sustain

Typically, compression gathers more sustain. When you play, you hear the notes last longer because the compressor keeps raising the level automatically until it runs out of gain. Every time you hit a chord or note, the compressor "attacks" on the sound envelope and reduces its volume, then the volume "releases" back up as the sound dies out.

Punch

When the compressor attacks on the sound, it does so in a particular way that is different with different compressors. Too fast an attack will suck the life out of your music while too slow loses effectiveness. One of the good things about the Punch Factory is that it has a complex attack characteristic that adapts to the sound, letting it emerge enhanced, or subtly exaggerated. This creates "Punch", aiding the articulation of the sound and creating a lush and full sound.

Expression

You will discover more great sounds on your instrument, and certain musical genres will become more playable. An example is blues. The Punch Factory will blend the notes musically, making every note audible without sucking out any of the feeling. Rich sustains will not fade into oblivion.

Optical Compression - What Is It?

There are many, many ways to build a compressor. Various devices can be used to create the core circuit that controls the gain of the compressor in response to a control signal. Each type of device has its own advantages and disadvantages. Every available technology has produced popular compressors over the years. However, one of the most beloved types of compressors is the "optical compressor".

An optical compressor is created from the combination of a light sensitive resistor called a photocell, and a controllable light source such as a small light bulb or LED. Devices called optocouplers combine a photocell and light source inside a light-proof package. The photocell changes its resistivity depending

upon the intensity of the light.

Attack, Release & Memory

Compressors are said to be in "attack" when they are in the act of reducing the gain and in "release" when the gain is recovering, or rising back up after an attack. Photocells exhibit a function called "memory". When just a few brief attacks have been experienced, the photocell recovers quite fast, bringing back the level more quickly. However, after repeated and constant attacking, the photocell builds up a memory of the light pulses and recovers more gradually. This helps to smooth out the compression and preserve the quality of the sound.

The optocoupler used in the Punch Factory is designed especially for audio and is produced exclusively for Aphex. It has special characteristics unusually well suited to music instrument compression. This means the Punch Factory is unique. No other compressor sounds like this one.



Specifications

Model 1404	
Input Z	Active: 50K Ω Passive: 10Meg Ω
Output Z	Instrument: 1K Ω D.I.: 150K Ω
Maximum Input Level	Passive: 1.5V RMS Active: 6V RMS
Frequency Response	10Hz - 30kHz +/- 1dB
SNR (Typical)	70dB
Compression Ratio	3.7:1
Maximum Gain	30dB
Max Compression Range	>30dB
Power Drain	5mA
Battery Type	9V
External Power	5-32VAC 7-48 VDC +48V Phantom

ApheX reserves the right to continually improve our products. All specifications are subject to change without notice.

Limited Warranty

PERIOD

One year from date of purchase

SCOPE

All defects in workmanship and materials. The following are not covered:

- Voltage conversions
- Units on which the serial number has been defaced, modified, or removed
- Damage or deterioration:
 - Resulting from installation and/or removal of the unit.
 - Resulting from accident, misuse, abuse, neglect, unauthorized product modification or failure to follow instructions contained in the User's Manual.
 - Resulting from repair or attempted repair by anyone not authorized by ApheX Systems.
 - Occurring from shipping (claims must be presented to shipper).

WHO IS PROTECTED

This warranty will be enforceable by the original purchaser and by any subsequent owner(s) during the warranty period, so long as a copy of the original Bill of Sale is submitted whenever warranty service is required.

WHAT WE WILL PAY FOR

We will pay for all labor and material expenses for covered items. We will pay return shipping charges if the repairs are covered by the warranty.

LIMITATION OF WARRANTY

No warranty is made, either expressed or implied, as to the merchantability and fitness for any particular purpose. Any and all warranties are limited to the duration of the warranty stated above.

EXCLUSION OF CERTAIN DAMAGES

ApheX Systems' liability for any defective unit is limited to the repair or replacement of said unit, at our option, and shall not include damages of any other kind, whether incidental, consequential, or otherwise.

Some States do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from State to State.



Service Information

1. If it becomes necessary to return this unit for repair, you must first contact Aphex Systems, Ltd. for a Return Authorization (RMA number).
2. Pack the equipment in a strong carton containing at least 2 inches of padding on all sides. Be sure the unit cannot shift around inside the carton. Include a letter explaining the symptoms and/or defect(s). Be sure to reference the RMA number in your letter and mark the RMA number on the outside of the carton.
3. If you believe the problem should be covered under the terms of the warranty, you must also include proof of purchase.
4. Insure your shipment and send it to:

Aphex Systems, Ltd.
11068 Randall Street
Sun Valley, CA. 91352
PH: (818) 767-2929 FAX: (818) 767 -2641

About Us

Aphex is a leading manufacturer of products for recording, broadcast, and sound reinforcement. Be sure to ask your dealer about professional Aphex products or visit our website.

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Look for the other high quality music instrument effects pedals in the 1400 Series at music stores near you.

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